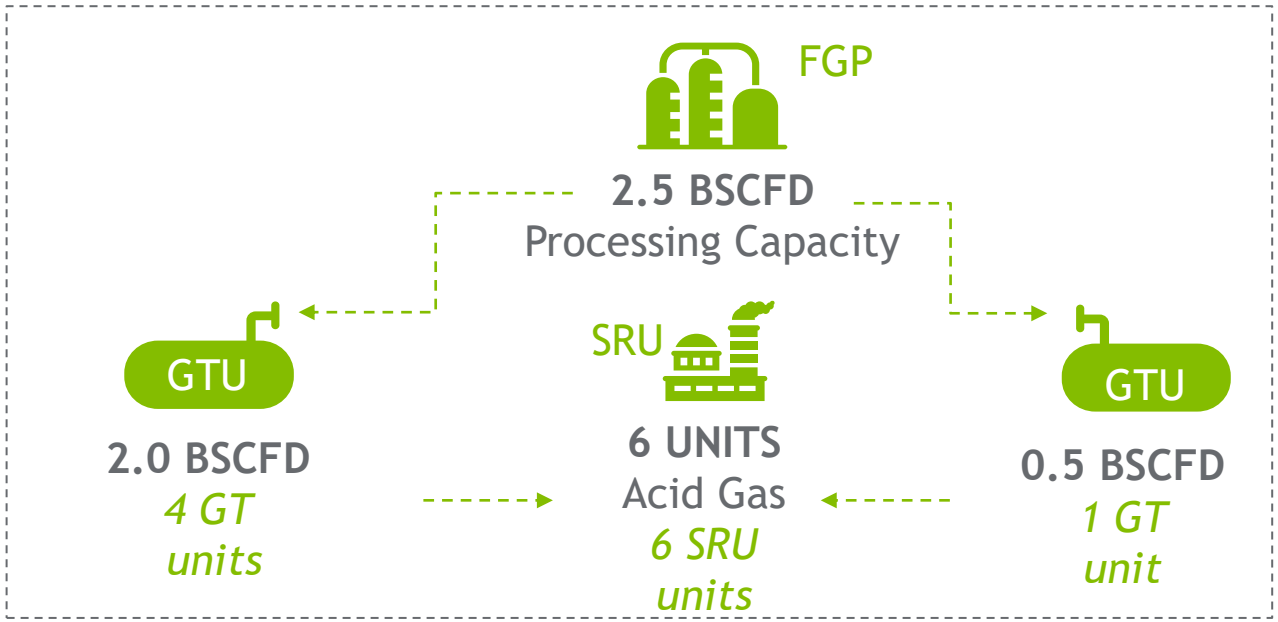
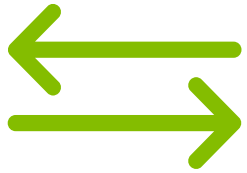
Aramco - Fadhili Gas Plant

Sustainable Success: Deploying ISA100 Wireless Monitoring Systems at Fadhili Gas Plant

Background

Fadhili Gas Plant





JV Power Generation

FPCC
FADHILI PLANT COGENERATION COMPANY
شركة محطة الفاضلي لتوليد الطاقة المزدوج

ENGIE
الشركة السعودية للكهرباء
Saudi Electricity Company
aramco

FGP

Sales Gas

Liquid Sulfur

FPCC

1.5 GW
Power Generation

steam

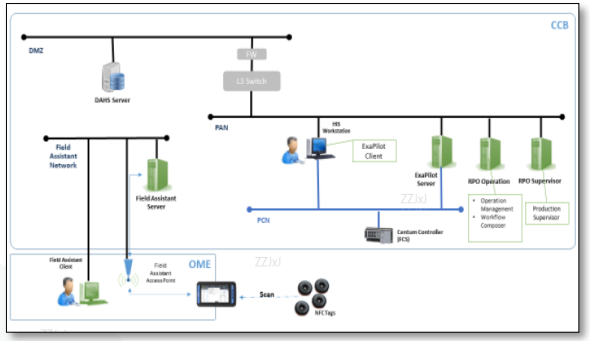
3.2 MMPPH
Steam Generation

Background

Overview of ISA100 wireless technologies adoption

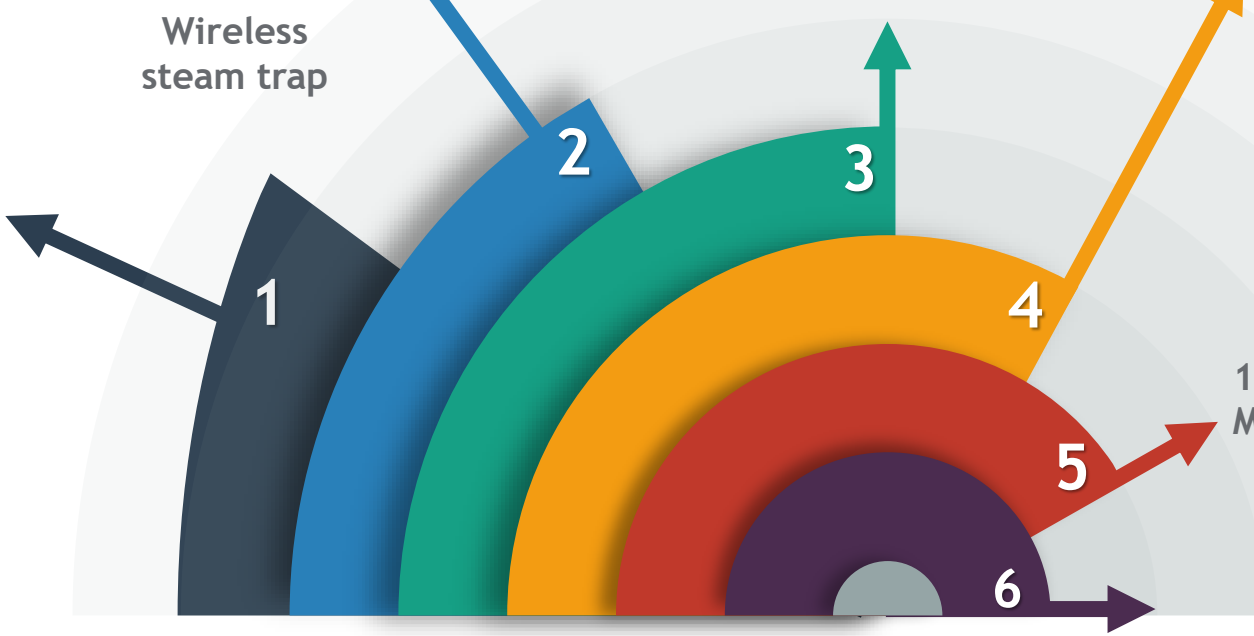
2200+
Wireless
steam trap

450+
wireless vibration



Field Assistant: Provides information for field activities in process plant.

ISA 100
Infrastructure
Access points

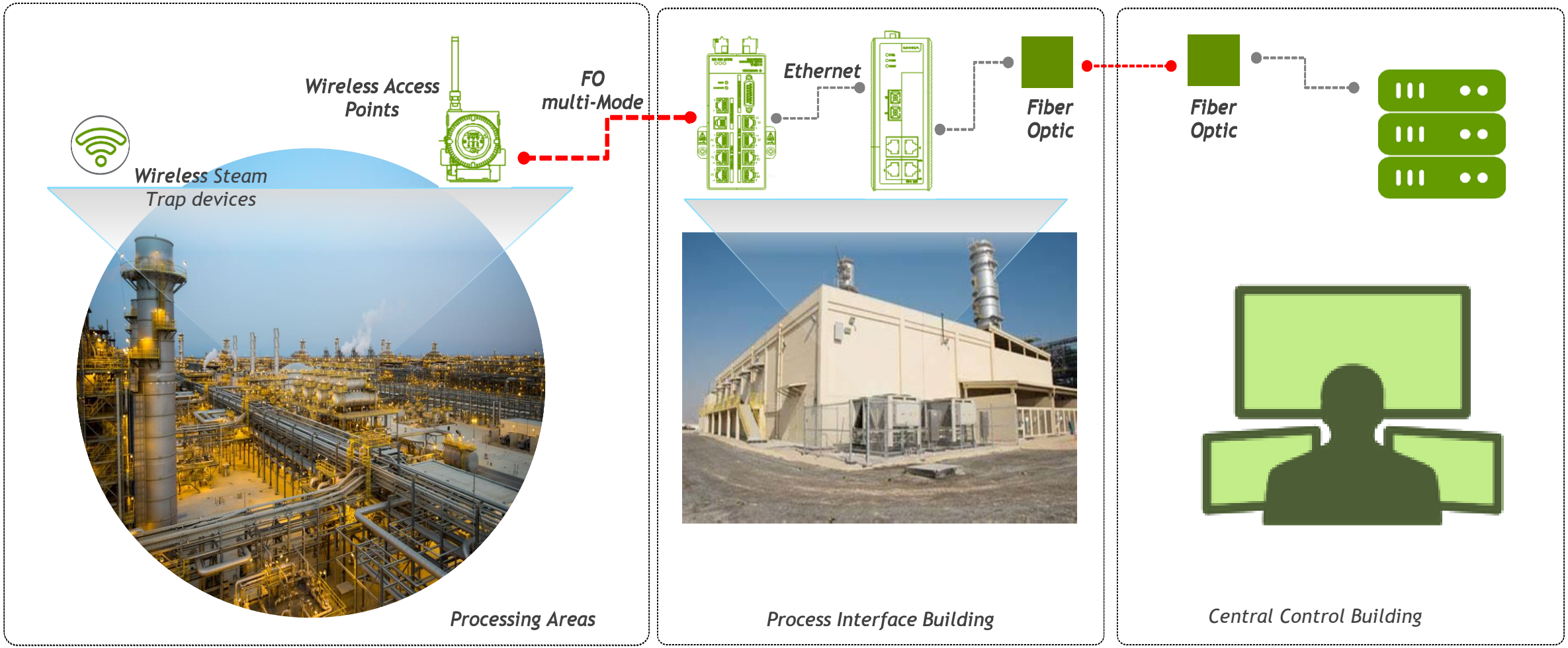


12,500 Real-time
Measurements

FGP is the first fully integrated wireless plant

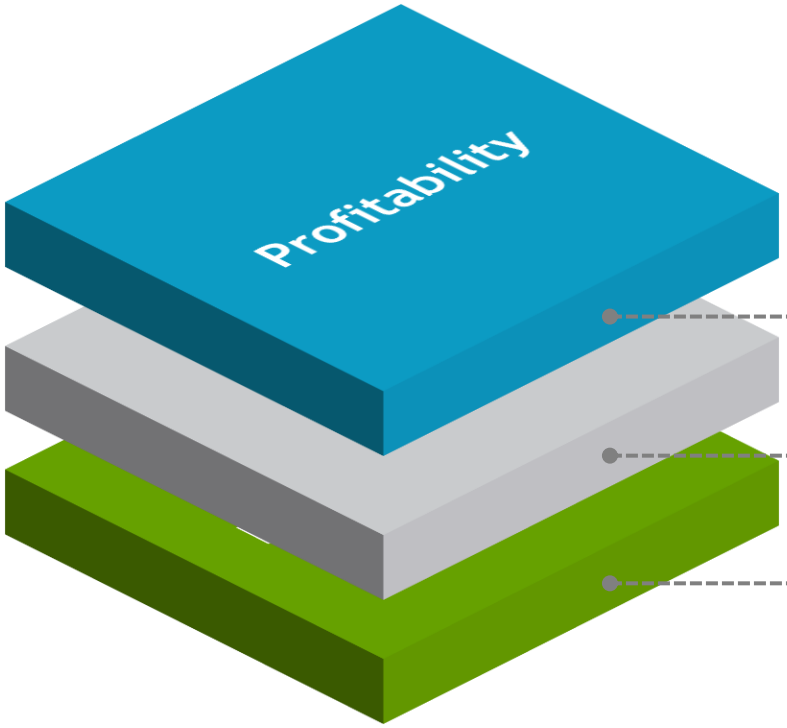
Background

Overview of ISA100 wireless Topology



Background

Why wireless ISA100 ?



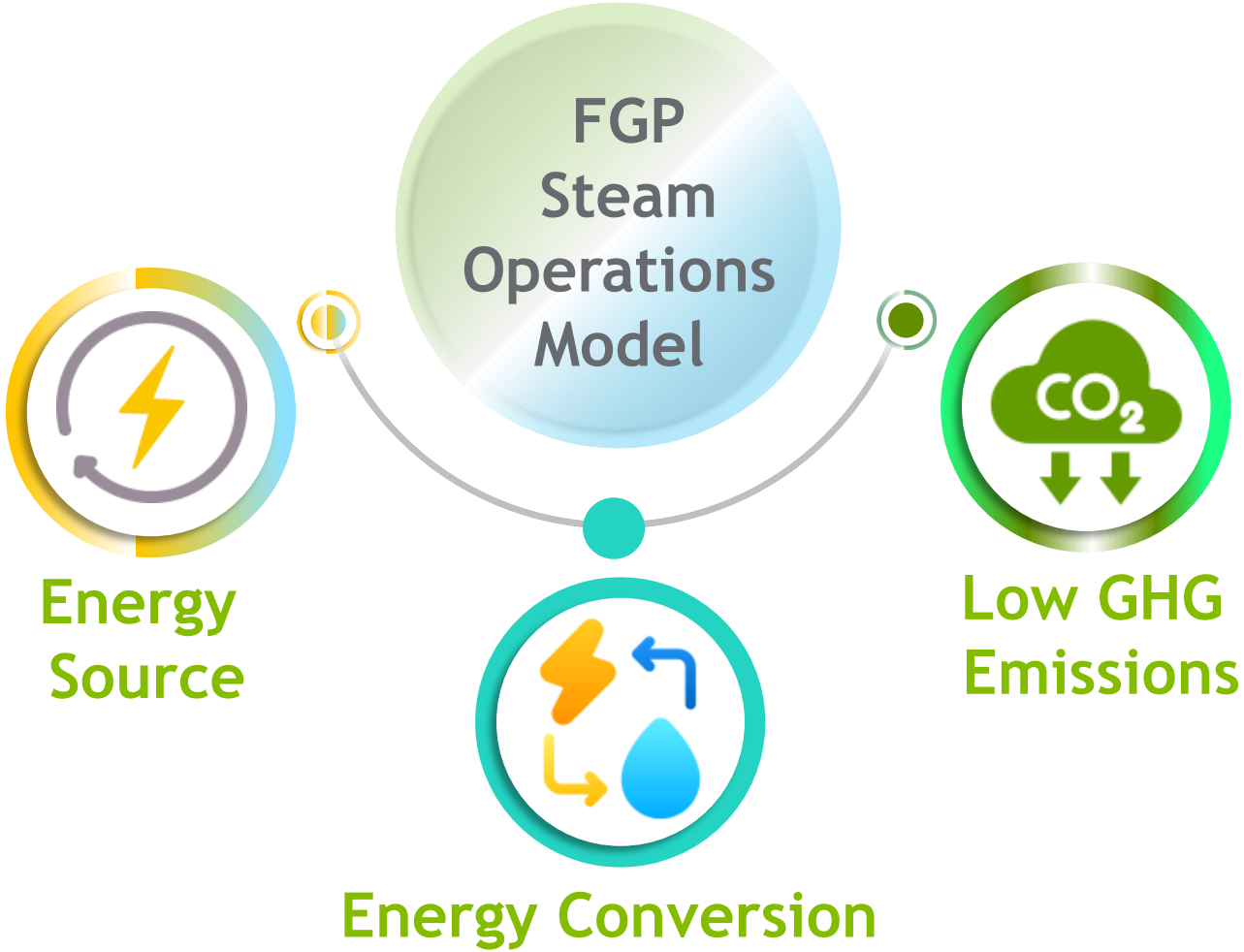
ECONOMIC ADVANTAGES & OPERATIONAL SAVINGS

FLEXIBILITY IN PROJECT EXECUTION

EXPANDABILITY TO AVAIL NEW PROCESS INSIGHTS

Our Steam as a Resource

Role of Steam and its Economic Impact



FGP Vision Toward Sustainability

Part of Fadhili team commitment to energy conservation and to reduce FGP energy intensity, FGP implemented a new technology to monitor all steam traps. This monitoring system will use very cost effective method by using wireless technology. Also, from safety point view this system will avoid steam hammering in main headers.

Deployment of ISA100 Wireless Steam Trap Monitoring

Initial Challenges in Steam and Resource Management

Steam and condensate losses exceeding the design target

Inefficient steam traps

Inaccuracy of main steam flowmeters

Unavailability of the Steam Trap Monitoring Systems (STMS) to proactively monitor the steam system.

Deployment of ISA100 Wireless Steam Trap Monitoring

Implementation Challenges

Enhance the management of steam resources

Build cost-effective system with real time monitoring

Provide a proactive measures to identify leakages and malfunctioned steam traps

To prevent undetectable blocked steam traps that could lead to asset failure

Deployment of ISA100 Wireless Steam Trap Monitoring

Implementation Requirements

Overall plant monitoring

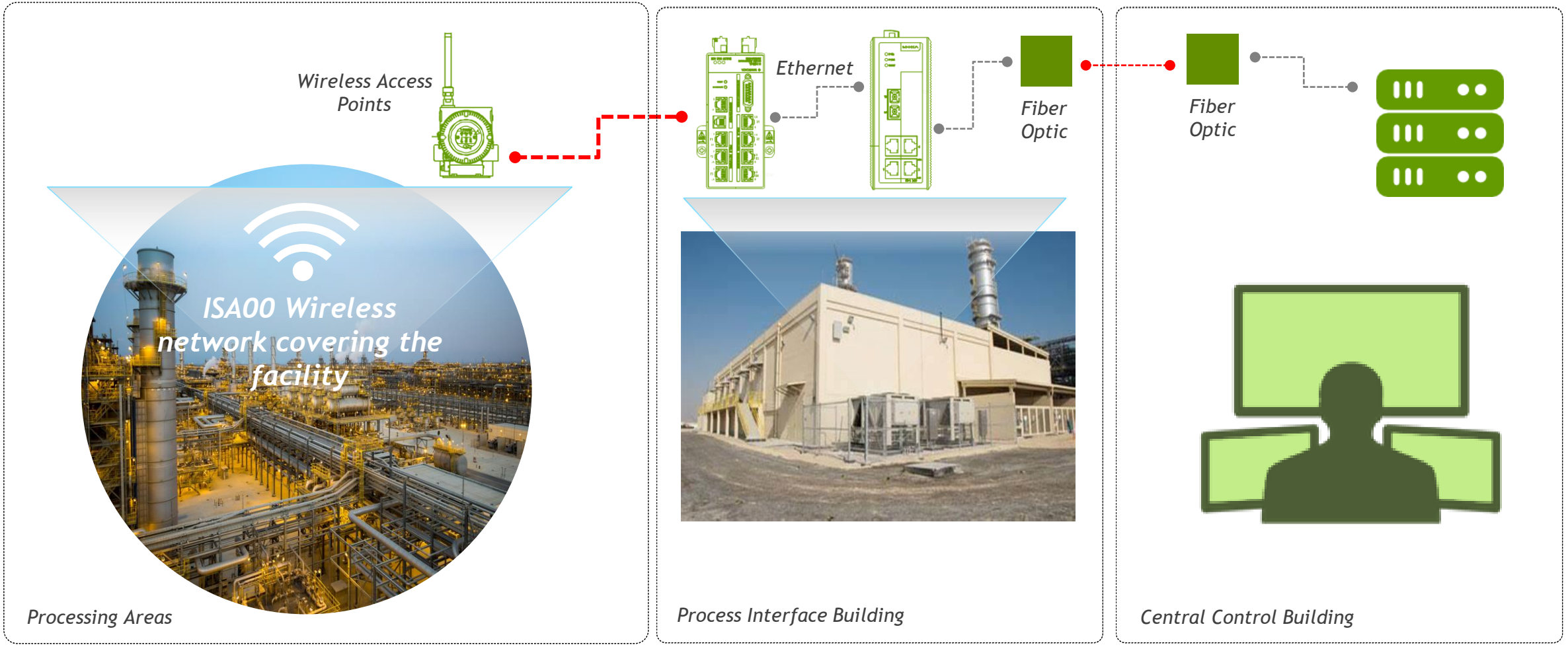
Communication protocol

Centralized System

Identification Features

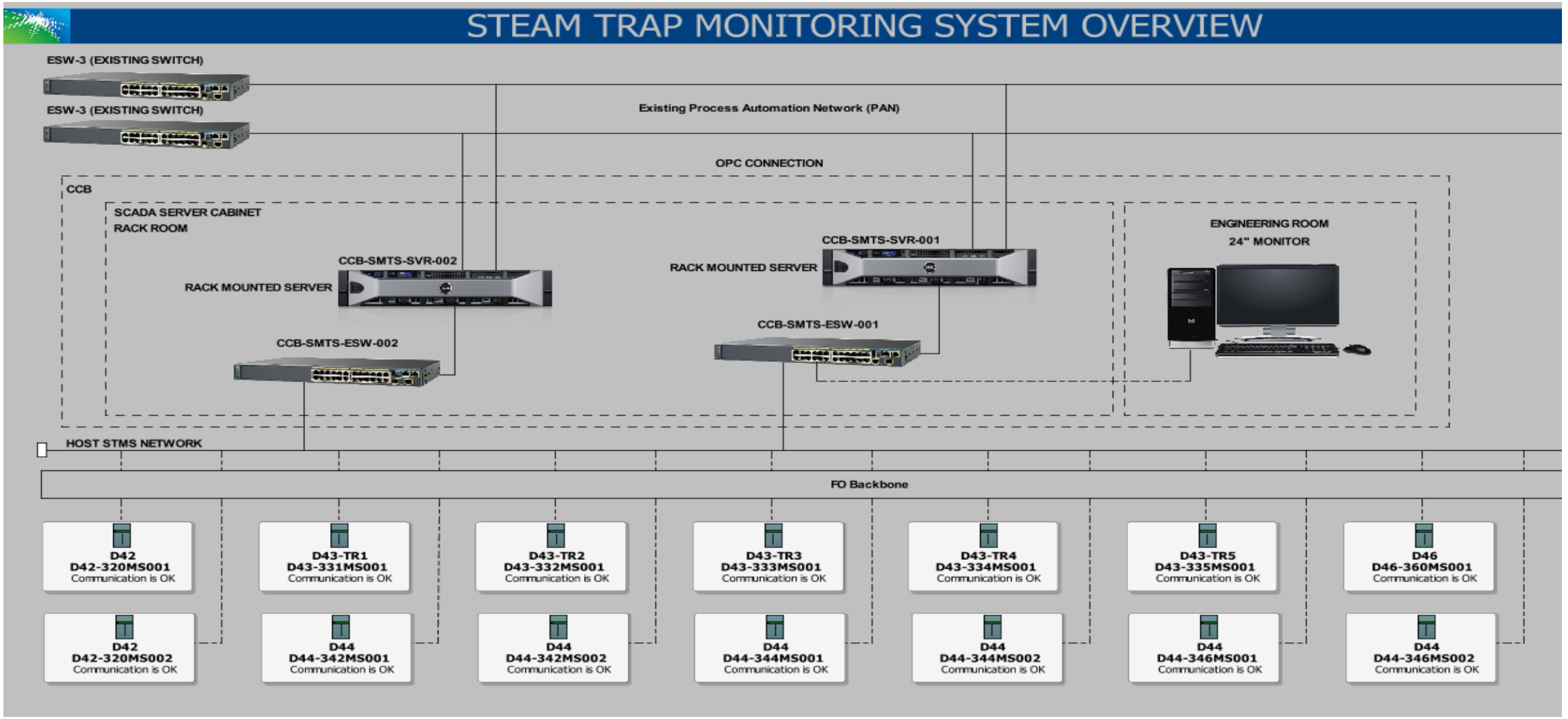
Deployment of ISA100 Wireless Steam Trap Monitoring

Implementation Solutions



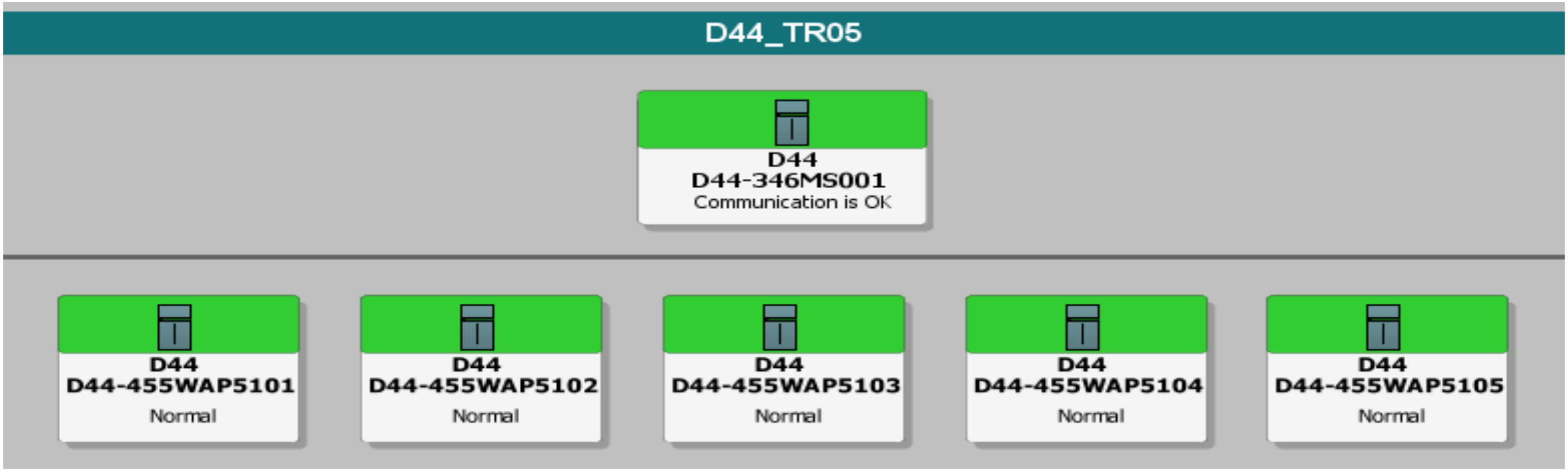
Deployment of ISA100 Wireless Steam Trap Monitoring

Implementation Solutions: System Overview



Deployment of ISA100 Wireless Steam Trap Monitoring

Implementation Solutions: System Overview



Deployment of ISA100 Wireless Steam Trap Monitoring

Implementation Solutions: System Overview

STAP	CONDITION	LEAKAGE	PIPE TEMP
213-AT-1002	COLD	0.0	125.6
213-AT-1004	COLD	0.0	114.8
213-AT-1007	NOT LEAKING	0.0	159.8
213-AT-1008	NOT LEAKING	0.0	183.2
213-AT-1010	COLD	0.0	141.8
213-AT-1012	NOT LEAKING	0.0	181.4

Economic Impact on Our Organization

- Availability of monitoring devices substituted the need of manual regular checks.

Reduction in Maintenance Cost

ISA100 Implementation Cost Effectiveness

- 90% cost reduction in implementation
- Scalable system which can adopt new technologies
- Fully integrated with the plant control system

Wireless Vibration Monitoring

Operational Efficiency

- Continuous monitoring of critical systems
- Maintaining steam losses within the limits
- Adding new technologies for better monitoring

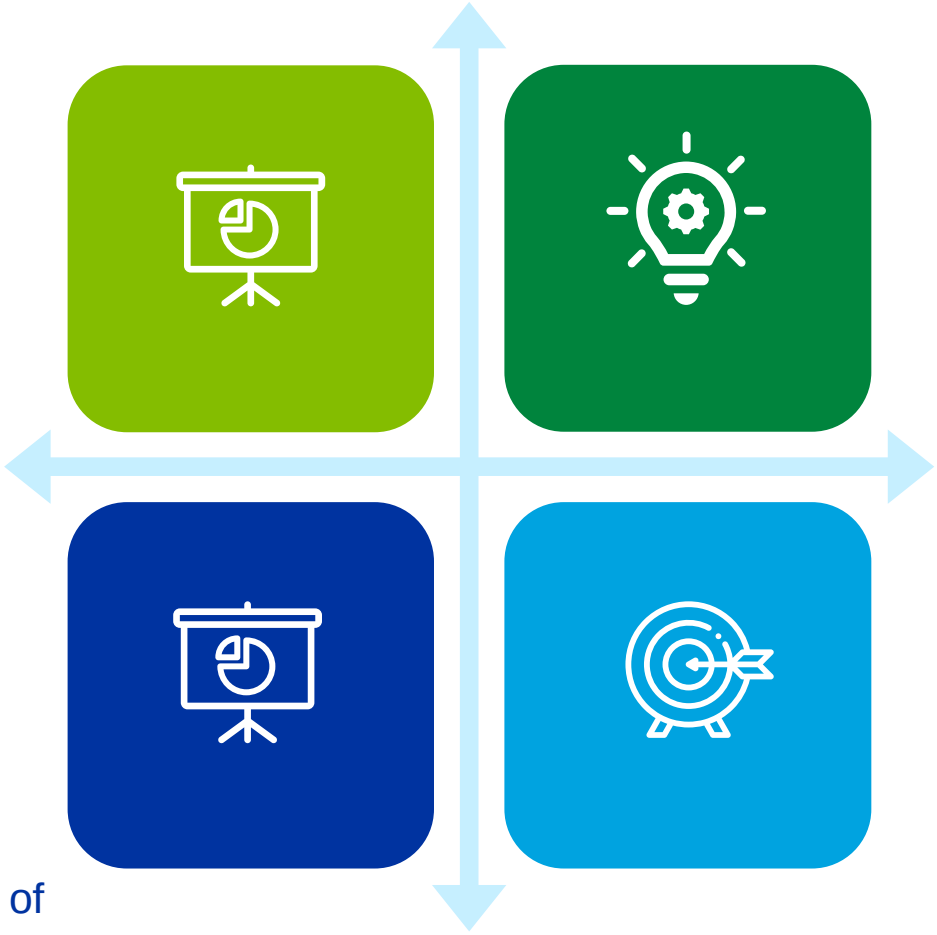
Wireless Gas Detection

Energy Savings and Conservation

Quantifying Energy Savings: Our Case Study

1 Encountered Issue

Excess steam and condensate losses at one of the operational areas



2 Initial Assumption

Steam traps prematurely failed at high quantities causing hammering at both steam and condensate piping

3 Findings & Analysis

- Less than 20% of steam trap failed (global rate = 25%)
- Steam traps are not the root cause of the high losses. Other factors play major roles

4 Achieved Results

12 tons/h enhancement in steam resources

What is Next?

Ongoing Initiatives and Continuous Improvement

Current phase

- Maintaining existing wireless technologies
- Adopting new gas detection technologies

Design phase

- Wireless Steam Trap Monitoring System
- Wireless Vibration Monitoring System

Future phase

- Wireless monitoring system is a standards for all future projects


arca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